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REGULAR ARTICLES

Midwife-led care model for reducing caesarean rate: A novel concept for worldwide birth units where standard obstetric care still dominates

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KEYWORDS

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Abstract Caesarean rate has been increasing year by year in China and other countries in the world. In fact, caesarean section is associated with increased risk of maternal mortality and serious foetal pulmonary morbidity. To reduce caesarean rate, obstetricians in physician-based birth units get used to take early intervention for any delay in labour progress that could cause dystocia. However, standard obstetric care enhanced by obstetric power has not consistently been shown to reduce rate of caesarean delivery. Other than physician-based model, midwife-led model of care is aiming to promote normal birth by use of midwives' skills as well as continuous support rather than augmentation of labour through excessive medical treatment. Midwife-led care model is novel to worldwide birth units where standard obstetric care still dominates. It has made some headway in efforts to reduce caesarean rate. The fact that standard obstetric care of childbirth have not consistently reduced rate of caesarean delivery encourages us for creating the hypotheses that midwife-led care model satisfying puerpera with care and support could minimise unnecessary obstetric intervention and facilitate vaginal birth, and finally reduces caesarean rate. This hypothesis, if confirmed, might have the potential to be disseminated elsewhere in the world, where most women still take standard obstetric care. Moreover, it has political implications for the national health-care policymaking.

Introduction

In March 2008, an innovative birth unit called midwife-led normal birth unit (MNBU) was opened to women in labour in a Chinese urban hospital [1]. Its aim is to use continuous emotional support and midwives' skills to decrease the possibility of a caesarean section and support normal birth. MNBU encourages spontaneous vaginal deliveries without excessive intervention from obstetrician during birth process. It is quite unlike traditional physician-based birth unit where most

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women still take standard obstetric care. Initial experience gained from MNBU indicates that midwife-led model of care could reduce caesarean rate to a certain extent.

Caesarean rate in China

The rising rate of caesarean delivery in China should be concerned by obstetrician bearing responsibility for maternal and foetal health. According to Chinese nationwide health surveys, the percentage of nulliparous women who had caesarean delivery in urban China increased from 18% in 1990–1992 to 40% in 2000 [2]. A World Health Organization (WHO) global survey on maternal and perinatal health indicated that the overall rate of caesarean delivery in Asia in 2007–2008 was 27.3%. China had the highest overall rate (46.2%) among nine Asian countries [3]. The rate of caesarean delivery without indication in China (11.7%) far exceeded than in other Asian countries, for example, Vietnam (1.0%), Sri Lanka (0.8%) and Thailand (0.5%). Moreover, data from another investigation revealed that caesarean rate was extraordinarily high in some Chinese cities. Jiaxing City (an urban area located approximately 88 km southwest of Shanghai, China) had a caesarean rate close to 90% between 2002 and 2004 [4]. Many caesarean deliveries were performed on maternal request without any medical indication.

Adverse effects

Women who demanded to undertake caesarean section without medical indication were unaware of the potential adverse effects of the procedure. In fact, caesarean section was associated with increasing risk of maternal mortality and severe morbidity [3], which included maternal infection, post-partum haemorrhage, ureteral injury, phlebothrombosis, endometriosis and hospital readmission [5–7]. In addition, caesarean delivery carried a greater likelihood for serious foetal pulmonary morbidity [8]. Rate of foetal death did not change significantly for caesarean delivery compared with spontaneous vaginal delivery [3]. Therefore, to improve maternal and perinatal outcomes, only when there is a medical indication should caesarean section be done [3]. It is vitally necessary to reduce the rate of caesarean delivery in China.

Hypotheses

Four basic elements have contributed to normal childbirth (Fig. 1). These elements can be simplified to 4P's:

1. *Power* – uterine force and voluntary muscle effort.
2. *Passage* – maternal bony pelvis and soft tissues of the reproductive tract.
3. *Passenger* – position, presentation or development of the foetus.
4. *Psyche* – confidence of the mother and encouragement from the companion.

The consequence of abnormalities of the four elements may cause dystocia. Dystocia is one of the most common indications for caesarean delivery to nulliparous women. To reduce caesarean rate, obstetricians are used to take early intervention for any delay in labour progress that could cause dystocia. The concept of active management is proposed in physician-based birth units. Active management means early intervention with

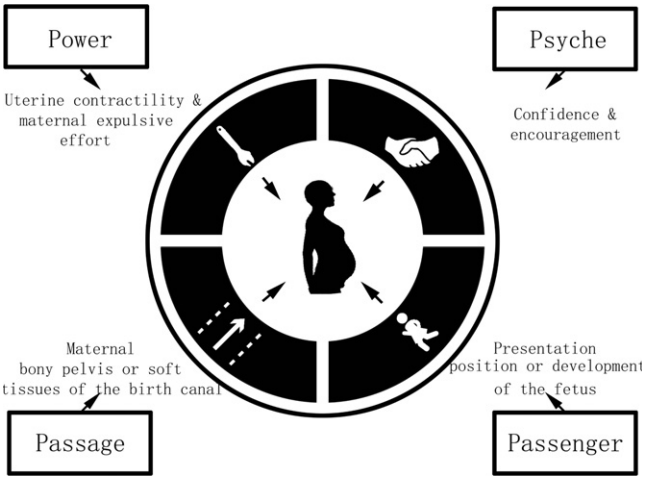

Figure 1 Four basic elements have contributed to normal childbirth. These elements include Power, Passage, Passenger, and Psyche, which can be simplified to 4P's. The consequence of abnormalities of the four elements may cause dystocia.

oxytocin infusion and amniotomy for any delay in labour progress to increase power of labour. Meanwhile, repeated pelvic examination is performed to evaluate whether there is cephalopelvic disproportion, which means the passage is not fit for the passenger. Active management of labour may shorten labour process, but it has not consistently been shown to reduce rate of caesarean delivery [9]. Reducing caesarean rate through active management remains unconvinced to many people. When labour progresses slowly, obstetrician actually focuses on the first three P's of the birth process, and looks for methods of treatment according to obstetrical procedure. However, the cause of dystocia such as uterine dysfunction and cephalopelvic disproportion is relative. Puerpera having such problem is often given for caesarean section. They could have delivered their babies vaginally with a little more patience. The forth element psyche is often ignored in physician-based birth units.

In a midwife-led birth unit, the fourth element psyche is appreciated. Highly experienced midwives provide not only necessary obstetric service, but something outside that pale, including effective communication, perinatal education and accompany nursing at the birth process. Encouragement from companion heightens the confidence of the mother. Women expressed their satisfaction with care and support, and the midwives there were able to play their role [10]. A pilot study in China showed that caesarean rate in midwife-led birth unit was lower than standard care labour ward (8.4% vs. 38.5%) [1].

The fact that standard obstetric care of childbirth enhanced by obstetric power have not consistently reduced rate of caesarean delivery encourages us for creating the hypothesis that midwife-led model of care could satisfy puerpera with care and support, and minimise unnecessary obstetric intervention and facilitate vaginal birth.

Evaluation of the hypotheses

Physician-based model

In China, physician-based obstetric care model made delivery differ from a natural process. Excessive intervention from obstetrician during birth process actually did harm to sponta-

neous delivery. Under the authority of obstetrician, midwives occupied only a supplementary place in standard birth units. Midwives were 'unnecessary' to normal birth [11]. There was often a gradual loss of midwifery skills among midwives. The ability of labour observation and maternal monitoring also reduced. Under such circumstances, normal childbirth surely ended up in caesarean delivery.

A pregnant woman was often seen as a patient, hence receiving obstetric intervention naturally. In physician-based birth units, the concept of active management was proposed to deal with any delay in labour progress [12,13]. Although active management was introduced with apparent success in birth outcomes [13,14], many investigation showed it did not reduce the rate of caesarean delivery [12,15–17]. Limiting the duration of labour with active management would result in more caesarean deliveries [18]. Evidence-based meta-analysis found active management with early intervention such as amniotomy and oxytocin to be associated with a modest reduction in the risk of caesarean section. However, the confidence interval was compatible with no effect [19]. Since active management had not consistently been shown to reduce rate of caesarean delivery, there was a debate on it in the field of obstetrics [9]. We hope standard birth units will consider active management as an alternative approach instead of a routine one. Only when there is an indicator of dystocia should active management be proposed to increase the inadequate uterine contraction. It has no application to women without complications of pregnancy or significant medical problems. In low-risk women, collaboration and support other than standard obstetric management made possible a greater number of spontaneous vaginal deliveries [20]. This class of women reported their satisfaction with care and support of a midwife [10]. This phenomenon indicates that intervention can be applied when necessary. Separation of obstetric intervention from maternity care is acceptable.

Intervention is actually necessary when foetal distress or obstruction of labour occurred. Reports showed that when intervention was needed, the women from the midwife-led birth unit were much easier for obstetricians to work with [1]. Women had learned a lot about the birth from midwives. Self-confidence heightened by midwives made women face perverse labour fearlessly.

Two-one model

The two-one model of care is a new concept to Chinese birth units [1]. It is different from standard physician-based obstetric care model. In a midwife-led birth unit where psyche has become a major concern, a midwife and a birth companion serve a predelivery mother. This model of care is aiming to promote normal birth by use of midwives' skills as well as continuous support rather than augmentation of labour through oxytocic administration or amniotomy, etc., by obstetrician. The goal is to give birth without intervention for healthy childbearing women.

Childbirth is a significant life event that affects a large number of women. During birth, women are vulnerable to a series of psychological disorders such as depression and anxiety [21]. They also feel lonely in clinical birth environments surrounded by unfamiliar personnel. Emotional support is essential to them. However, continuous support during labour has become the exception rather than the norm because dominant obstetric care is now based on medical treatment. In fact, continuous support during birth has been found to have positive effects on improved outcomes for mothers and babies [22]. Women who received continuous labour support were more likely to achieve a vaginal birth [23]. Therefore, a homely birthplace created by a midwife-led unit, in which a friendly labour support is provided by a birth companion, could make women have their baby vaginally with great confidence.

Conclusion

Several factors have contributed to the increase in rate of caesarean delivery in China. Maternal request is one of the most predominant contributors to the increase. Lack of confidence and fear of dystocia are associated with rate of caesarean delivery. On the one hand, some women are concerned about possible maternal morbidity caused by a long period of spontaneous vaginal delivery; on the other hand, necessary operative vaginal delivery such as forceps delivery and vacuum extraction in the second-stage labour is difficult to meet parents' consent. We assume that labour support provided by midwives could increase confidence of women who are trying to deliver their baby vaginally. When self-confidence is heightened by midwives, women would face obstacles of birth fearlessly. Midwife-led model of care could reduce caesarean rate. This hypothesis, if confirmed, might have the real potential to be disseminated elsewhere in China, where most women still take standard obstetric care. Moreover, it has political implications for the national health-care policymaking.

Conflict of interest

The author declares that there is no conflict of interest with regard to the content of this article.

Overview Box

What do we already know about the subject?

Caesarean rate has been increasing year by year in China and other countries in the world. Standard obstetric care enhanced by obstetric power has not consistently been shown to reduce rate of caesarean delivery. Midwife-led model of care other than physician-based model is aiming to promote normal birth by use of midwives' skills.

What does your proposed theory add to the current knowledge available, and what benefits does it have?

We believe that labour support provided by midwives could increase confidence of women who are trying to deliver their baby vaginally. Midwife-led model of care could reduce caesarean rate. This theory has political implications for the national health-care policymaking.

Among numerous available studies, what special further study is proposed for testing the idea?

Midwife-led care model is a novel concept for worldwide birth units where standard obstetric care still dominates. It has the real potential to be disseminated elsewhere in the world, where most women still take standard obstetric care. A set of clinical research should be carried out to assess the safety and effectiveness of our hypothesis.

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